

Difference between instrumental and personal observations of sunshine.

Stations.	Apparatus.	Total possible duration for the whole month.	Personal estimated area of clear sky.	Instrumental record of sunshine.			
				Photographic.	Difference.	Thermometric.	Difference.
Bismarck, N. Dak.	P.	408.4	38	42	+4		
Helena, Mont.	P.	408.4	52	54	+2		
Portland, Oreg.*	P.	407.0	37	30	-7	30	-
Eastport, Me.	T.	405.2	44	54	+10		
Northfield, Vt.	P.	403.6	45	54	+9		
Portland, Me.	T.	403.6	40			59	+19
Rochester, N. Y.	T.	402.1	55			68	+13
Buffalo, N. Y.†	T.	402.1	37			51	+14
Boston, Mass.	T.	401.1	53			61	+7
Chicago, Ill.	P.	401.1	54	57	+14	63	+9
Cleveland, Ohio	T.	401.1	43				
Des Moines, Iowa	T.	401.1	39			65	+26
Detroit, Mich.	P.	401.1	52	38	+4	62	+10
Eureka, Cal.	T.	399.4	34				
New York, N. Y.	P.	399.4	49	56	+28	57	+8
Salt Lake City, Utah.	T.	399.4	28				
Colorado Springs, Colo.	P.	398.6	45	76	+20	62	+17
Denver, Colo.	T.	398.6	56				
Philadelphia, Pa.	T.	398.6	47			71	+24
Baltimore, Md.	T.	397.0	46			47	+1
Cincinnati, Ohio	P.	397.0	56	50	+5	79	+23
Kansas City, Mo.	T.	397.0	45				
St. Louis, Mo.	P.	397.0	53	55	-4	72	+19
Washington, D. C.	P.	397.0	59	68	+8		
Dodge City, Kans.	T.	396.2	60				
Louisville, Ky.	T.	396.2	55			81	+26
San Francisco, Cal.	P.	396.2	44	84	+16	62	+18
Santa Fe, N. Mex.	T.	393.6	68				
Little Rock, Ark.	T.	392.7	37			73	+36
Atlanta, Ga.	T.	391.6	59			79	+20
Wilmington, N. C.	P.	391.6	69	84	+6	83	+14
San Diego, Cal.	P.	390.5	78	91	+11		
Phoenix, Ariz.	P.	390.5	80	72	+13		
Savannah, Ga.	T.	389.9	59				
Vicksburg, Miss.	T.	389.9	67			67	0
New Orleans, La.	P.	387.4	48	44	+9	50	+2
Galveston, Tex.	T.	386.4	35				

* Records by both methods. † Records for only 21 days, for which the total possible duration of sunshine was 285.9 hours.

ATMOSPHERIC ELECTRICITY.

Numerical statistics relative to auroras and thunderstorms are given in Table X, which shows the number of stations from which meteorological reports were received, and the number of such stations reporting thunderstorms (T) and auroras (A) in each State and on each day of the month, respectively.

The dates on which reports of thunderstorms for the whole country were most numerous were: 17th, 269; 20th, 204; 24th, 186; 28th, 196; 29th, 216.

Thunderstorm reports were most numerous in Illinois, 178; Iowa, 218; Minnesota, 204; Missouri, 249; Ohio, 279; Wisconsin, 180.

Thunderstorms were most frequent in: Iowa, Missouri, Nebraska, Wisconsin, 23 days; Michigan, 22; Minnesota, 20.

Auroras.—The evenings on which bright moonlight must have interfered with observations of faint auroras are assumed to be the four preceding and following the date of full

moon, viz, the 1st, and also from the 21st to the 30th, inclusive. On the remaining twenty days of this month 138 reports were received, or an average of about 7 per day. The dates on which the number of reports especially exceeded this average were: 3d, 57; 4th, 44; 21st, 39.

Auroras were reported by a large percentage of observers in: North Dakota, 89; Wisconsin, 57; Michigan, 38; Minnesota, 43.

Auroras were reported most frequently in: North Dakota, 13 days; Michigan, 11; Wisconsin, 7; Minnesota, 6.

CANADIAN REPORTS.

Thunderstorms were reported as follows: 7th, Qu'Appelle; 11th, Port Stanley, Winnipeg; 12th, Saugeen; 17th, Toronto, White River, Port Stanley, Parry Sound; 18th, Port Arthur, Charlottetown; 20th, Port Stanley; 22d, Qu'Appelle; 25th, Swift Current; 27th, Qu'Appelle, Medicine Hat; 30th, Port Stanley.

Auroras were reported as follows: 2d, Prince Albert; 3d, Rockliffe, Port Arthur, Medicine Hat, Prince Albert; 4th, Rockliffe, Toronto, Medicine Hat; 5th, Father Point, Port Arthur, Winnipeg, Minnedosa, Battleford; 7th, Port Arthur; 8th, Father Point, Toronto; 9th, Father Point; 10th, Battleford; 11th, Quebec, Battleford; 12th, Battleford; 17th, Battleford; 20th, Quebec; 21st, Charlottetown, Father Point, Toronto, Minnedosa, Medicine Hat, Battleford; 22d, Charlottetown, Quebec, Toronto, Port Arthur; 23d, Father Point; 24th, Quebec; 26th, Port Arthur; 28th, Quebec; 30th, Battleford.

INLAND NAVIGATION.

The extreme and average stages of water in the rivers during the current month are given in Table VIII, from which it appears that a number of rivers attained the danger line, although the flood stages were of comparatively short duration. The Tennessee reached its highest point at Chattanooga on the 5th and at Johnsonville on the 12th; the Cumberland was highest at Burnside on the 2d and at Nashville on the 7th; the Ohio was highest at Cincinnati on the 4th. As a result of these and other high waters, the Mississippi was highest at Helena on the 17th and at New Orleans on the 23d.

METEOROLOGY AND MAGNETISM.

By Prof. FRANK H. BIGELOW.

For a description of the methods of constructing the tables and curves of Chart V, see the WEATHER REVIEW for October, 1895, and January, 1896. The numbers in the columns H. and D. are added respectively to the mean values for Washington and Toronto, i. e., $H=0.18250$; $D=180.0$. The values of the vertical forces are omitted, as well as dz , s and α , which depend upon it. Stagnant eastward circulation continued during April, and summer continental conditions, with high areas on the coast and a low area in the central valleys prevailed. From the 11th to the 14th the Atlantic high was abnormally warm, causing an excess over the seasonal temperature. The solar magnetic type was inverse during the month.

CLIMATE AND CROP SERVICE.

By JAMES BERRY, Chief of Climate and Crop Service Division.

The following extracts relating to the general weather conditions in the several States and Territories are taken from the monthly reports of the respective services.

Snowfall and rainfall are expressed in inches.

Alabama.—The mean temperature was 68.3°, or 4.8° above normal; the highest was 94°, at Tuscaloosa on the 23d and 26th, and at Pineapple on the 24th, and the lowest, 30°, at Healing Springs, Pineapple, and Valleyhead on 3d. The average precipitation was 3.75, or 1.37 below normal; the greatest monthly amount, 11.30, occurred at Pushmataha

(of which amount 7.40 fell on the night of the 13th), and the least, 1.24 at Sturdevant.

Arizona.—The mean temperature was 60.3°, or 0.7° above normal; the highest was 97°, at Maricopa on the 27th, and the lowest, 8°, at Flagstaff on the 18th. The average precipitation was 0.21, or 0.27 less than normal; the greatest monthly amount was 3.00, at Pantano; no precipitation occurred at several stations.

Arkansas.—The mean temperature was 65.2°, or 2.4° above normal; the highest was 94°, at Warren on the 26th, and the lowest, 24°, at Keesees Ferry on the 2d and 3d. The average precipitation was 3.65,

or 1.15 below normal; the greatest monthly amount, 9.36, occurred at Forrest City, and the least, 0.46, at Fort Smith.

California.—The mean temperature was 52.8°, or 4.9° below normal; the highest was 1.00°, at Volcano Springs on the 29th, and the lowest, zero, at Bodie on the 1st. The average precipitation was 4.40, or 2.04 above normal; the greatest monthly amount, 18.45, occurred at Bowmans Dam, in the high mountain region; at a number of stations no precipitation occurred.

Colorado.—The month was warmer than usual. The highest temperature observed was 90°, at Lamar on the 26th, and the lowest, 16° below zero, at Breckenridge on the 1st and 2d. The precipitation was unevenly distributed, the greater portion of the State receiving less than half the normal amount, while over portions of the Divide and the counties on the eastern border more than the usual amount fell. The greatest monthly amount, 8.20, was reported from Stamford, while none occurred at Gunnison.

Florida.—The mean temperature was 71.0°, or about normal; the highest was 98°, at McClenny on the 25th, and the lowest, 36°, at Fort Meade, on the 3d, and at Lake Butler on the 5th. The average precipitation was 0.50, or nearly 2.00 below normal; the greatest monthly amount, 3.53, occurred at Milton, and many stations had only a "trace" or none at all. The month was one of the driest on record.

Georgia.—The mean temperature was 67.8°, or about 4.0° above normal; the highest was 96°, at Americus on the 24th, and the lowest, 29°, at Diamond on the 3d. The average precipitation was 1.77, or 1.89 below normal; the greatest monthly amount, 3.60, occurred at Marshallville, and the least, 0.25, at Fleming.

Idaho.—The mean temperature was 40.8°; the highest was 80°, at Payette on the 5th, and the lowest, 10° below zero, at Lake on the 1st. The average precipitation was 1.68; the greatest monthly amount, 4.81, occurred at Atlanta, and the least, 0.27, at Burnside.

Illinois.—The mean temperature was 59.0°, or 7.2° above normal; the highest was 95°, at New Burnside on the 15th, and the lowest, 13°, at Kishwaukee on the 2d. The average precipitation was 2.96, or 0.59 below normal; the greatest monthly amount, 6.81, occurred at Chemung, and the least, 1.07, at Palestine.

Indiana.—The mean temperature was 58.8°, or 5.9° above normal; the highest temperature was 93°, at Vincennes on the 29th, and the lowest, 13°, at South Bend on the 2d. This was the warmest April on record. The average precipitation was 1.81, or 1.69 below normal; the greatest monthly amount, 5.91, occurred at Angola, and the least, "trace" at Bloomington.

Iowa.—The mean temperature was 54.5°, or 5.5° above normal; the highest was 94°, at Cedar Rapids on the 15th and 16th, and the lowest, 10°, at Marshalltown and Rock Rapids on the 1st. It was the warmest April ever known in this State. The average precipitation was 5.02, or 2.42 above the normal; the greatest amount, 9.67, occurred at Cedar Falls, and the least, 2.35, at Keokuk.

Kansas.—The mean temperature was 60.6°, or 4.8° above normal; the highest was 97°, at Hays City on the 18th, and the lowest, 8°, at Colby on the 2d. It was the warmest April on record. The average precipitation was 3.84, or 1.41 above normal; the greatest monthly amount, 7.77, occurred at Russell, and the least, 1.02, at Coolidge.

Kentucky.—The mean temperature was 63.6°, or 6.8° above normal; the highest was 96°, at Louisa on the 17th, and at Sandyhook on the 18th, and the lowest, 24°, at Leitchfield and Sandyhook on the 4th. The average precipitation was 1.65, or 2.71 below normal; the greatest monthly amount, 6.82, occurred at Sandyhook (5.15 of which amount fell on the 2d and 3d); the least, 0.13, was reported from Pleasure Ridge Park. Several observers report that this was the driest April "within the memory of the oldest inhabitant."

Louisiana.—The mean temperature was 70.2°, or 1.3° above normal; the highest was 92°, at Davis on 24th, and at Liberty Hill on the 30th, and the lowest, 30°, at Davis on the 3d. The average precipitation was 3.59, or 0.42 below normal; the greatest monthly amount, 8.75, occurred at New Iberia, and the least, 0.50, at Napoleonville.

Maryland.—The mean temperature was 55.7°, or 4.1° above normal; the highest was 99°, at Millsboro, Del., on the 19th, and the lowest, 12°, at Deer Park on the 8th. The average precipitation was 1.42, or 2.29 below normal; the greatest monthly amount, 2.98, occurred at Grantsville, and the least, 0.49, at Great Falls.

Michigan.—The mean temperature was 48.7°, or 5.2° above normal; the highest mean for April during the past ten years. The highest temperature recorded was 92°, at Berlin on the 17th, and the lowest, 7° below zero, at Iron River on the 2d. The average precipitation was 2.99, or 0.75 above the normal; the greatest monthly amount, 5.10, occurred at Rockland, and the least, 1.25, at Hayes.

Minnesota.—The mean temperature was 44.5°; the highest was 84°, at Wabash on the 15th, and the lowest, 22° below zero, at Grande Portage on the 1st. The average precipitation was 5.91; the greatest monthly amount, 10.30, occurred at New London, and the least, 1.93, at Belleplaine.

Mississippi.—The mean temperature was 69.7°, or 5.0° above normal; the highest was 96°, at Rosedale on the 27th, and the lowest, 31°, at French Camp on the 3d. The average precipitation was 40.3, or 2.40 below normal; the greatest monthly amount was 10.64, at Williamsburg, and the least, 1.15, at Biloxi.

Missouri.—The mean temperature was 61.8°, or 6.8° above normal; the highest was 92°, at Oregon on the 15th, and the lowest, 17°, at Bethany on the 3d. It was the warmest April on record. The average precipitation was 3.54, or 0.22 below normal; the greatest monthly amount, 7.10, occurred at Shelby, and the least, 1.11, at Tindall.

Montana.—The mean temperature was 40.0°, or about 3.0° below normal; the highest was 90°, at Billings on the 27th, and the lowest, 9° below zero, at Lewistown on the 16th. The average precipitation was 1.45, or 0.32 below normal; the greatest monthly amount, 5.02, occurred at Fort Custer, and the least, 0.02, at Utica.

Nebraska.—The mean temperature was 51.9°, or 2.9° above normal; the highest was 96°, at Wilber on the 26th, and the lowest, 4° below zero, at Alliance on the 2d. The average precipitation was 4.82, or 2.42 above normal; the greatest monthly amount, 11.22, occurred at York, and the least, 0.65, at Fort Robinson.

Nevada.—The mean temperature was 41.7°, or 4.8° below normal; the highest was 89°, at St. Thomas on the 8th, and the lowest, 9° below zero, at Stofiel on the 1st. The average precipitation was 1.00, or 0.22 above the normal; the greatest monthly amount, 3.99, occurred at Lewers Ranch, and the least, "trace," at Los Vegas.

New England.—The mean temperature was 45.8°, or 2.2° above normal; the highest was 97° at Hadley, Mass., on the 17th, and the lowest, 6°, at Kineo, Me., on the 8th. The average precipitation was 1.31, or 1.69 below the normal; the greatest monthly amount, 2.66, occurred at West Milan, N. H., and the least, 0.28, at Chelsea, Vt.

New Jersey.—The mean temperature was 52.4°, or 4.5° above normal; the highest was 98°, at Paterson, Millville, and Barnegat on the 18th, and the lowest, 12°, at Gillette on the 3d. The average precipitation was 1.35, or 2.12 below normal; the greatest monthly amount, 2.30, occurred at Elizabeth, and the least, 0.64 at Dover.

New Mexico.—The mean temperature was slightly below normal; the highest was 94°, at Roswell on the 22d, and the lowest, 6° below zero, at Labelle on the 1st. The precipitation was about normal; the greatest monthly amount, 2.68, occurred at Clayton; no precipitation occurred at several stations.

North Carolina.—The mean temperature was 62.3°, or 4.4° above normal; the highest was 98°, at Henderson and Salem on the 18th, and the lowest, 21°, at Highlands on the 3d, and at Linville on the 8th. The average precipitation was 1.99, or 1.79 below normal; the greatest monthly amount, 4.80, occurred at Linville, and the least, 0.64, at Wilmington.

North Dakota.—The mean temperature was 40.1°, or 2.5° below normal; the highest was 92°, at Medora on the 26th, and the lowest, 2°, at Dickinson on the 2d. The average precipitation was 4.37, or 2.65 above normal; the greatest monthly amount, 8.61, occurred at Sheyenne, and the least, 0.16, at Washburn.

A severe tornado occurred at 5 o'clock, p. m., Sunday, April 26, in the western portion of Barnes County, the most destruction to property occurring near Hobart, and one person was injured at that place. The tornado formed near the foot of Lake Eckelson and moved in a zig-zag course in a northeasterly direction, barns and a schoolhouse in its path being wrecked, and all of the buildings belonging to Nels Monson, a farmer, were destroyed. Monson was carried away with the house, and was afterward found in an unconscious condition, lying in a slough about 50 yards from where the house had stood. His injuries consisted of bruises and a broken arm, but were not fatal. The storm extended about 20 miles in length, and was only about 40 rods in width.

Ohio.—The mean temperature was 56.9°, or 6.3° above normal, and was the warmest April on record; the highest was 103°, at Thurman on the 17th and the lowest, 15°, at Orangeville on the 3d, and at Auburn and Hillhouse on the 8th. The average precipitation was 3.78, or 0.16 below normal; the greatest monthly amount, 6.87, occurred at Montpelier, and the least, 0.46, at Pomeroy.

Sandusky, Seneca, Erie, Wayne, and Stark counties were visited about 3 p. m. on the 20th by a severe storm, resulting in considerable damage, especially in Sandusky and Seneca counties; two lives were lost near Fremont, and fully a dozen people were injured near Fremont, Fostoria, and Alliance. The damage caused by the storm in Sandusky County is estimated at fully \$100,000; and in Seneca County at about \$10,000, averaging about \$1,000 for the other counties referred to. Funnel-shaped clouds were observed near Fremont and Vickery at the time of the storm. Thunderstorms occurred generally over the State on the 20th, and hail fell in many places. The storm marked the close of ten days of extreme heat.

Oklahoma.—The mean temperature was 66.1°; the highest was 99°, at Hennessey on the 26th, and the lowest, 20°, at Pondcreek on the 2d. The average precipitation was 1.49; the greatest monthly amount, 3.67, occurred at Woodward, and the least, 0.69, at Clifton.

Oregon.—The mean temperature was 45.5°, or 2.4° below normal; the highest was 72°, at The Dalles on the 20th, and at Pendleton on the 24th, and the lowest, 10°, at Silver Lake on the 22d. The average precipitation was 5.98, or 2.19 above normal; the greatest monthly amount, 18.27, occurred at Langlois, and the least, 0.52, at Newbridge.

Pennsylvania.—The mean temperature was 53.0°, or 4.6° above normal; the highest was 97°, at Carlisle on the 18th, and the lowest, 4°, at Saegerstown on the 5th. The average precipitation was 1.75, or 1.76

below normal; the greatest monthly amount, 3.39, occurred at Pittsburgh, and the least, 0.20, at Honesdale.

The characteristic features of April were its three distinctive periods of decided temperature conditions, which prevailed during the first, middle, and latter part of the month. From the 1st to the 12th the continued cold weather almost completely held in check all visible signs of growth in vegetation, and spring seemed to make no advancement. This period of cold was followed by one of ten days of torrid heat. During this period growth was as marvelous as the unprecedented heat. Cereals and grasses sprang up as if by magic, trees burst into leaf and blossom, and the face of nature was rapidly changed from its dress of winter to its garb of spring. This rapid growth was somewhat checked by the cool weather which followed and prevailed from the 22d to the end of the month. The season, which was backward at the beginning of April, was fully up to the average at its close. Numerous frosts were reported on the 23d, but they were not damaging.

South Carolina.—The mean temperature was 66.9°, or 4.1° above normal; the highest was 98°, at Gillisonville on the 17th, and the lowest, 30°, at Santuc on the 9th. The average precipitation was 1.31, or 1.83 below normal; the greatest monthly amount, 2.46, occurred at Mount Carmel, and the least, 0.19, at Yemassee.

South Dakota.—The mean temperature was 47°, or about 3° above normal; the highest was 93°, at Faulkton on the 27th, and at Nowlin on the 26th, and the lowest, 4°, at Clark on the 2d, and at Wentworth on the 1st. The average precipitation was 4.85, or 2.50 above normal; the greatest monthly amount, 8.30, occurred at Webster, and the least, 1.39, at Cross.

Tennessee.—The mean temperature was 64.8, or more than 5.0° above normal; the highest was 98°, at Andersonville on the 25th, and the lowest, 25°, at Cookeville and Greenville on the 4th. The average precipitation was 3.70, or about 0.50 below normal; the greatest monthly amount, 6.50, occurred at Tullahoma, and the least, 1.70, at McKenzie.

Texas.—The mean temperature was 1.2 above normal; the highest

was 104°, at Fort Ringgold on the 29th, and the lowest, 15°, at Happy on the 2d. The average precipitation was 1.22 below normal; the greatest monthly amount, 6.14, occurred at Kerrville; there was no precipitation at Midland and Sierra Blanca.

Utah.—The mean temperature was 41°; the highest was 87°, at Cisco on the 25th, and the lowest, 1° below zero, at Grover on the 1st. The average precipitation was 1.07; the greatest monthly amount, 3.83, occurred at Park City, and the least, "trace," at Castlegate, Cisco, and Giles.

Virginia.—The mean temperature was 58.6°; the highest was 100°, at Bonair on the 18th and 19th, and the lowest, 10°, at Guinea on the 8th. The average precipitation was 1.61, which is decidedly below the normal; the greatest monthly amount, 3.71, occurred at Blacksburg, and the least, 0.41, at Alexandria.

Washington.—The mean temperature was 45.1°, or 1.9° below normal; the highest was 80°, at Connell on the 25th, and the lowest, 12°, at Cascade Tunnel on the 1st and 3d. The average precipitation was 3.85, or 0.07 above normal; the greatest monthly amount, 9.91, occurred at Queets, and the least, 0.29, at Moxee.

West Virginia.—The mean temperature was 57.9°, or about 6.0° above normal; the highest was 95°, at Point Pleasant on the 18th, and the lowest, 12°, at White Sulphur Springs on the 8th. The average precipitation was 2.06, or 1.30 below normal; the greatest monthly amount, 4.35, occurred at Wheeling, and the least, 0.82, at Raleigh.

Wisconsin.—The mean temperature was 46.0°, or 2.0° above normal; the highest was 87°, at Prairie du Chien on the 15th, and the lowest, 7° below zero, at Spooner on the 5th. The average precipitation was 5.02, or more than twice the normal; the greatest monthly amount, 8.19, occurred at Viroqua, and the least, 1.18, at Crandon.

Wyoming.—The mean temperature was 41.0°, or about 1.0° above normal; the highest was 84°, at Fort Laramie on the 27th, and the lowest, 2° below zero, at Wise on the 18th. The average precipitation was 1.63, or slightly below normal; the greatest monthly amount was 3.53, at Laramie, and the least, 0.55, at Wheatland.

SPECIAL CONTRIBUTIONS.

RECENT PUBLICATIONS ON METEOROLOGY.

By Dr. J. H. McCARTY, Librarian Weather Bureau.

In response to requests from several correspondents, the Chief of the Weather Bureau has directed that there be published regularly in this REVIEW a list of recent publications bearing on meteorology and such other subjects as come within the field of study of the officials of the Weather Bureau. In this list of authors and titles the works that have been received by the Library of the Weather Bureau will take precedence, but other works whose titles are known will also be mentioned, although they have not yet been received, in order that the correspondents of the Weather Bureau may thus receive early notice of the publication of works in which they are interested. It is to be understood, however, that those who wish to consult the works on meteorology received by the Weather Bureau must do so in its own Library, where every convenience for study is afforded, as, in fact, is also the case in all the other scientific libraries in Washington.

Argentina.—*Boletino del Instituto Geografico Argentino*. Publicado bajo la direccion del Sr. Presidente del Instituto, Dr. Alejandro Sorondo. Tomo XVII—cuadernos 1, 2, 3. 119 pp. 2 maps. Svo. Buenos Aires. 1896.

Batavia.—*Observations made at the magnetical and meteorological observatory at Batavia in the year 1894, with appendix*. Vol. XVII. Published by the Government of Netherlands in India. 233 pp. 14 by 10. Batavia. 1895.

Batavia.—*Rainfall in the East India Archipelago*. Sixteenth year, 1894. 421 pp. Svo. Batavia. 1895.

England.—*Results of meteorological observations made at the Radeliffe Observatory, Orford, in the years 1888-1889 under the superintendence of Edward James Storrs, F. R. S.* Vol. XLV. Svo. Oxford. 1896.

England.—Burrough of Southport, Fernley Observatory. Meteorological Department. *Report and results of observations for the year 1895*. Two appendices. Joseph Baxendal, Meteorologist to the Corporation. 31 pp. Svo. Southport. 1896.

England.—Liverpool Observatory, Bidston, Birkenhead. Report of the Director of the Observatory to the Marine Committee and meteorological results deduced from the observations taken in the year, 1895. 40 pp. Svo. Liverpool. 1896.

MacDowell, Alex. B.—*Weather and Disease*. A curve history of their variations in recent years. 82 pp., with charts. Large 12mo. London. 1895.

France.—Service hydrometrique du Bassin de la Seine.—*Resume des observations centralisees (par le Service Hydrometrique du Bassin de la Seine) pendant l'annee 1894*. 56 pp. Svo. Versailles. 1895.

France.—Service hydrometrique du Bassin de la Seine. Observations sur les cours d'eau et la pluie centralisees pendant l'annee, 1894. Mr. G. Lemoine et Mr. Babinet, ingenieurs. 7 feuilles folio. Versailles. 1895.

Germany.—*Annalen der Physik und Chemie*. Neue Folge. Band. LVIII. No. 5. 205 pp. Svo. Leipzig. 1896.

Great Britain.—*Official Year Book of the scientific and learned societies of Great Britain and Ireland*. Comprising a list of the papers read during the year 1895. Thirteenth annual issue. 262 pp. Svo. London. 1895.

Hamburg.—*Jahrbuch der Astronomie und Geophysik* enthaltend die wichtigsten Fortschritte auf den Gebieten der Astrophysik, Meteorologie, und physikalischen Erdkunde. Von Dr. Hermann J. Klein. VI Jahrgang. 1895. 5 Lichtdruck und Chromotafeln. 376 pp. Svo. Leipzig. 1896.

Hamburg.—Aus dem Archiv der Deutsche Seewarte. XVIII Jahrgang. 1895. Herausgegeben von der Direction der Seewarte. No. 1.—*Oberflächentemperatur und Stromungsverhältnisse des Aequatorialgürtels des Stillen Ozeans*. Von Dr. Casar Puls. (See Met. Zeit. Heft. 5, 1896. Bibliographie.) No. 2.—*Bericht und Gutachten über der Versuche bezüglich der Abblendung der Schiffs-Seitenlichter*. Ausgeführt im Sommer, 1895, auf Anordnung des Reichs Marine amtes, von der Direktion der Deutschen Seewarte. Mit einer Kurven-Tafel. No. 3.—*Vergleichende Regenmessungen an der Deutschen Seewarte*. Von Prof. Dr. W. J. Van Bebber. Mit 1 lithograph Tafel. No. 4.—*Der Isobarentypen des Nord atlantischen Ozeans und Westeuropas, ihre Beziehungen zur Lage und Bewegung der barometrischen Max. und Min.* Prof. Dr. W. J. Van Bebber und Prof. Dr. W. Koepfen. Mit 23 lithog. Karten. No. 1, 38 pp.; No. 2, 28 pp.; No. 3, 14 pp.; No. 4, 27 pp. 4to. Hamburg. 1895.

Holland.—Rotterdam. A magnetic survey of the Netherlands for the epoch January 1, 1891. By Dr. Van Rijckevorsel. Part 1, *The observations*; Part 2, *The disturbances*. 103 pp. 10 maps. 4to. Rotterdam. 1895.

India.—Madras Observatory. *Daily meteorological means*. By C. Michin Smith, Government Astronomer. Includes mean hourly barometric variations from daily means for 20 years. 14 pp. 4to. Madras. 1896.